MC0081

Health Building Note 12

Supplement 2

Oral surgery
Orthodontics
Restorative dentistry

NHS Estates
An Executive Agency of the Department of Health

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Oral surgery
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London : HMSO

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About this publication

The Health Building Note series is intended to give advice on the briefing and design implications of Departmental policy. These Notes are prepared in consultation with representatives of the National Health Service and appropriate professional bodies. Health Building Notes are aimed at multi-disciplinary teams engaged in:

- designing new buildings;
- adapting or extending existing buildings.

Throughout the series, particular attention is paid to the relationship between the design of a given department and its subsequent management. Since this equation will have important implications for capital and running costs, alternative solutions are sometimes proposed. The intention is to give the reader informed guidance on which to base design decisions.

Health Building Note 12 Supplement 2

This Supplement focuses on District General Hospital accommodation for:

- consulting/treatment associated with the specialties of oral surgery, orthodontics and restorative dentistry;
- maxillo-facial, prosthetic and orthodontic appliance laboratory.

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1.0 Scope of Supplement 2 to Health Building Note 12

Introduction

1.1 Health Building Note (HBN) 12, Supplement 2, is a guide to the planning and design of oral surgery and orthodontic and restorative dentistry departments in general out-patients departments (OPD) of District General Hospitals (DGH).

1.2 It is a Supplement to HBN 12 – 'Out-patients department', 1989, which provides planning and design guidance for general out-patients accommodation, and should be read in conjunction with HBN 12.

1.3 Supplement 2 replaces Hospital Building Note 28 – 'Dental department of the out-patients department', 1970, and responds to changes which have occurred in oral surgery, orthodontics and restorative dentistry since that time, in particular:

a. development of the specialties of oral surgery, orthodontics and restorative dentistry;

b. greater awareness of the need for effective control of cross-infection;

c. the attendance of patients who are better informed and have higher expectations with regard to quality of service;

d. technological advances;

e. an increase in the number of specialist staff.

Inclusions

1.4 The department described in this Supplement includes accommodation suitable for:

a. the provision of consultant advice and treatment for cases of special difficulty referred as out-patients by general dental practitioners, general medical practitioners and other hospital consultants;

b. the provision of care and treatment for patients with cancer or with traumatic injuries;

c. the attendance of hospital in-patients when dental care is required for the relief of pain or other emergency or as part, or in support, of their general treatment;

d. the provision of comprehensive dental treatment for patients whose medical condition necessitates treatment at the department.

Exclusions

1.5 This Supplement does not include guidance for accommodation for dental services provided:

a. by general dental practitioners;

b. in primary health care premises;

c. in dental teaching hospitals;

d. in highly-specialised supra-district centres.

1.6 It is expected that most patients requiring oral surgery under general anaesthesia will be admitted to hospital as a day-patient or in-patient and the procedures carried out in an operating theatre.

2.0 General service considerations

Introduction

2.1 People attend oral surgery, orthodontic and restorative dentistry departments as out-patients for specialist consultation, examination and treatment. About 70% of out-patients are referred by general and community dental practitioners and the remainder mainly by general medical practitioners and other hospital consultants.

2.2 Out-patients attending oral surgery, orthodontic and restorative dentistry departments:

a. are mainly ambulant;

b. are often accompanied by an escort;

c. for oral and maxillo-facial surgery, may be any age;

d. for orthodontics, are mainly children or adolescents.

2.3 The environment in an oral surgery, orthodontic and restorative dentistry department should take into account the large number of children who attend. Special care should be taken to ensure that children are not unnecessarily distressed by the sight and/or sound of adult patients awaiting or undergoing invasive treatments. Provision of appropriate waiting facilities is important, including a designated area where children can play before and after treatment.

2.4 Oral and maxillo-facial surgery includes:

- trauma work;
- treatment of life-threatening conditions, such as haemorrhage and spreading infection;
- treatment of sinister conditions, such as suspected cancer, soft tissue lesions and lesions of the jaws;
- dental treatment required because of general medical conditions, such as AIDS, hepatitis, severe heart disease and haemophilia;
- treatment of referred cases beyond the skill of a general dental practitioner;
- surgical extraction and transplantation of teeth;
- orthognathic surgery;
- surgical placement of implants for jaws.

2.5 Orthodontics includes:

- treatment for malocclusion resulting from developmental abnormalities and faulty relationship of the teeth and/or jaws;
- treatment and management of cleft lip and palate patients.

2.6 Oral surgeons, orthodontists and other specialists may hold joint sessions in connection with orthognathic surgery and transplantation of teeth.

2.7 Restorative dentistry includes provision of advice and treatment of appropriate referred cases which are beyond the skill of a general dental practitioner.

Workload trends

2.8 When sizing accommodation for an oral surgery and orthodontic department, the most convenient measure of workload is the number of attendances per annum. Figure 1 illustrates the workload trend in England over the period 1981 to 1989/90. Figure 2 indicates the number of clinic sessions held to accommodate the workload shown in Figure 1.

2.9 Figures 3, 4 and 5 illustrate a breakdown of the oral surgery and orthodontic workload for England in 1989/90. They show the range of total out-patient attendances by health authority.

2.10 It is noted from Figure 3 that:

a. 67 health authorities recorded total attendances between 0 and 5,000

   60 health authorities recorded total attendances between 5,001 and 10,000

   64 health authorities recorded total attendances over 10,000;

b. 11 of the 22 health authorities showing in excess of 15,000 total attendances relate to dental teaching hospitals.

Functional unit

2.11 In this Supplement, the dental chair is used as the basis for determining the size of the oral surgery and orthodontic department. The number of dental chairs required in a department may be calculated as described in Appendix 2.

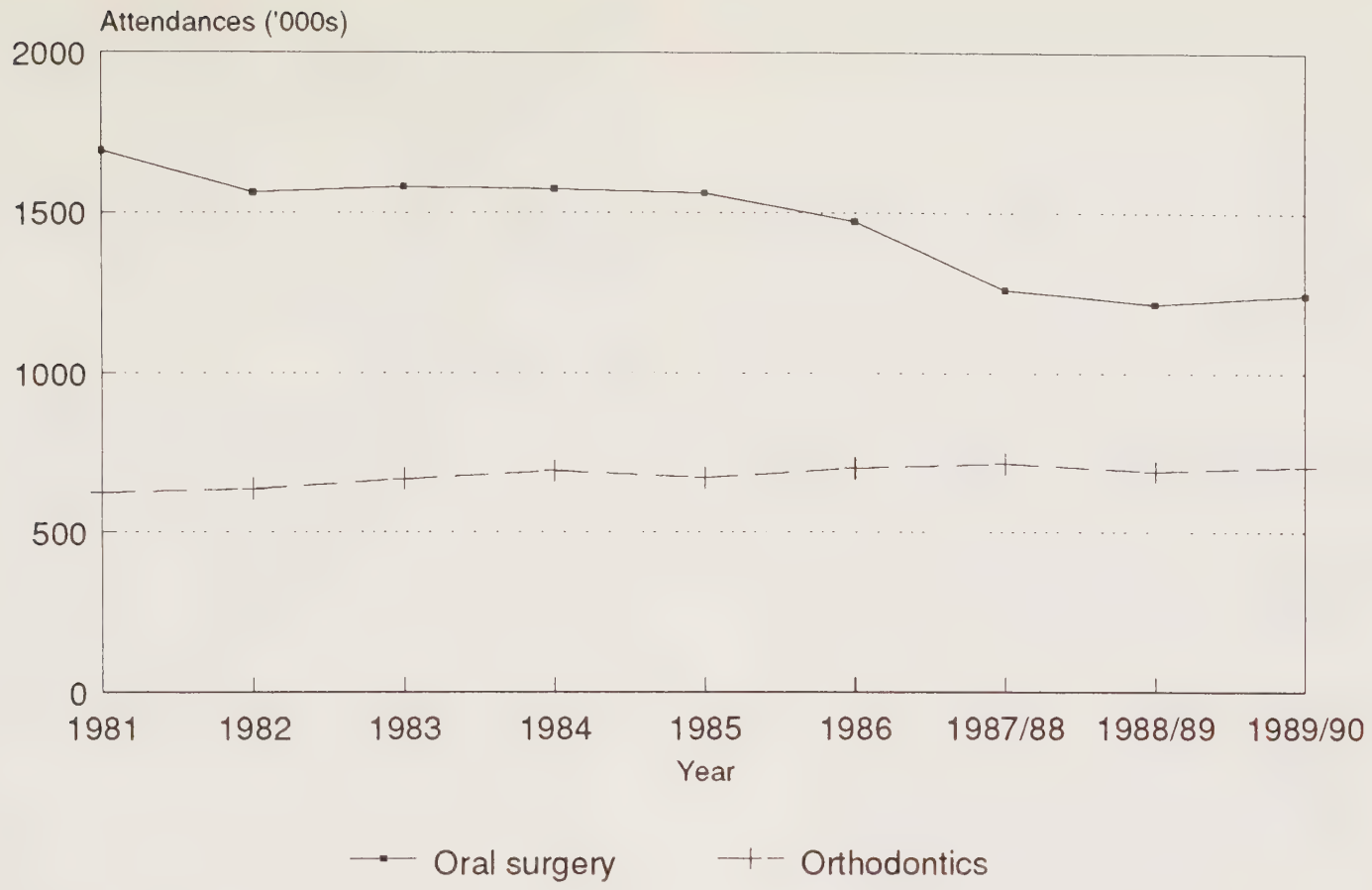


Figure 1 Number of total (new and return) attendances at oral surgery and orthodontic clinics in England during the period 1981 to 1989/90.

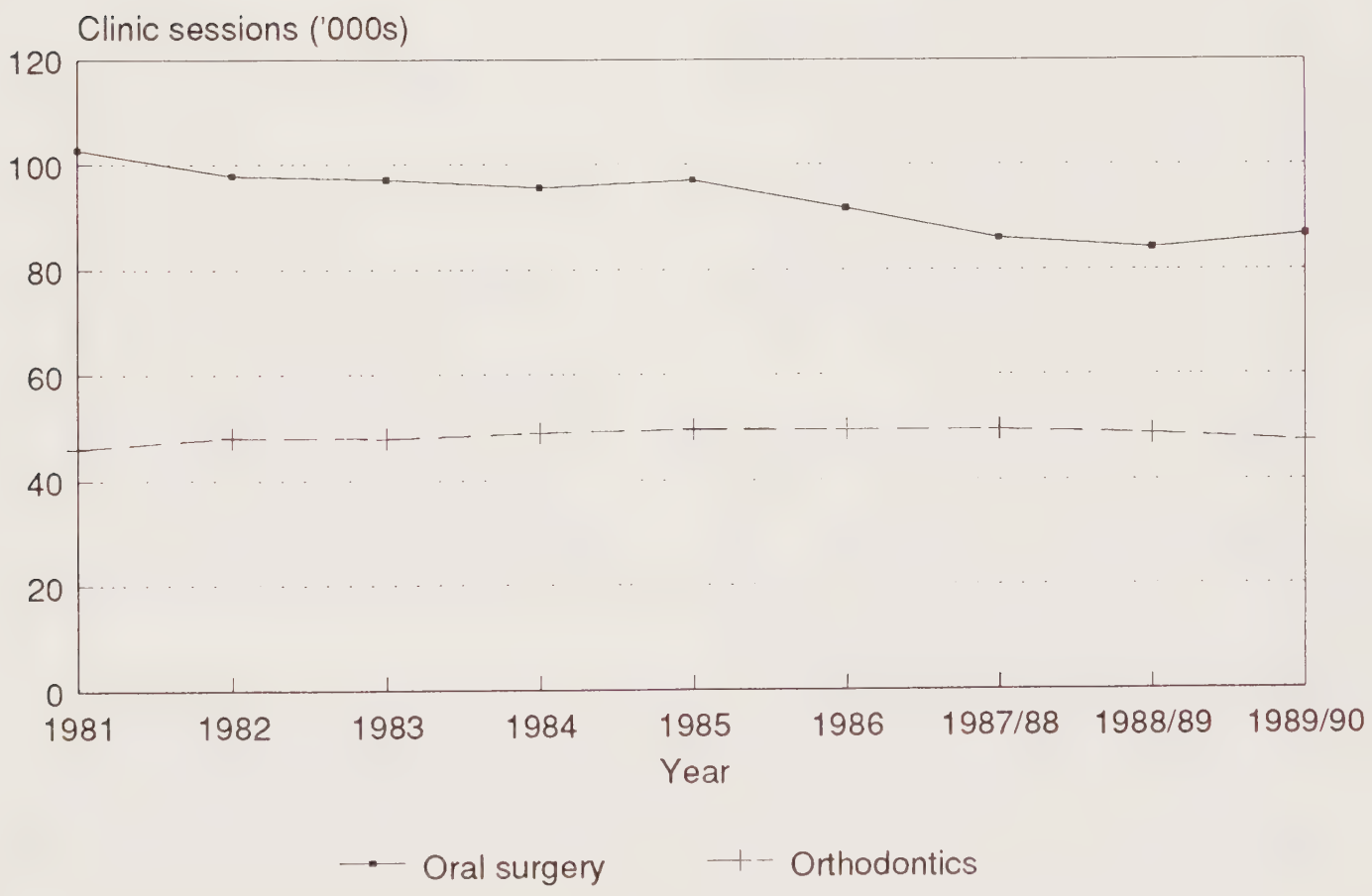


Figure 2 Number of clinic sessions held in England for oral surgery and orthodontics during the period 1981 to 1989/90

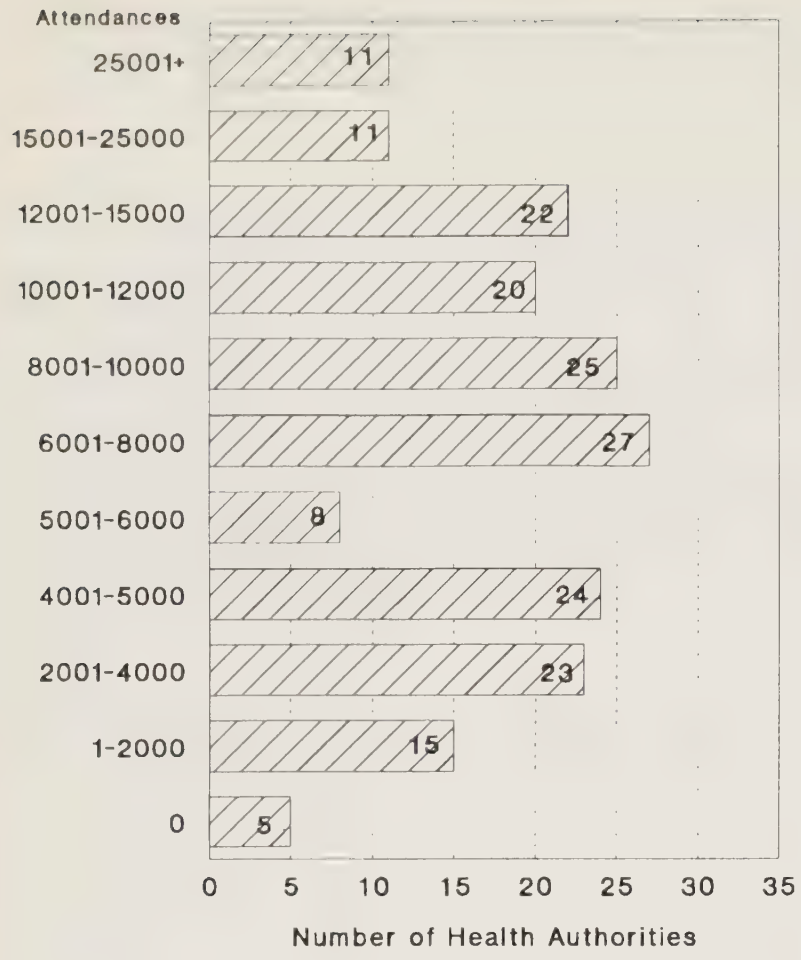


Figure 3 Oral surgery and orthodontics.

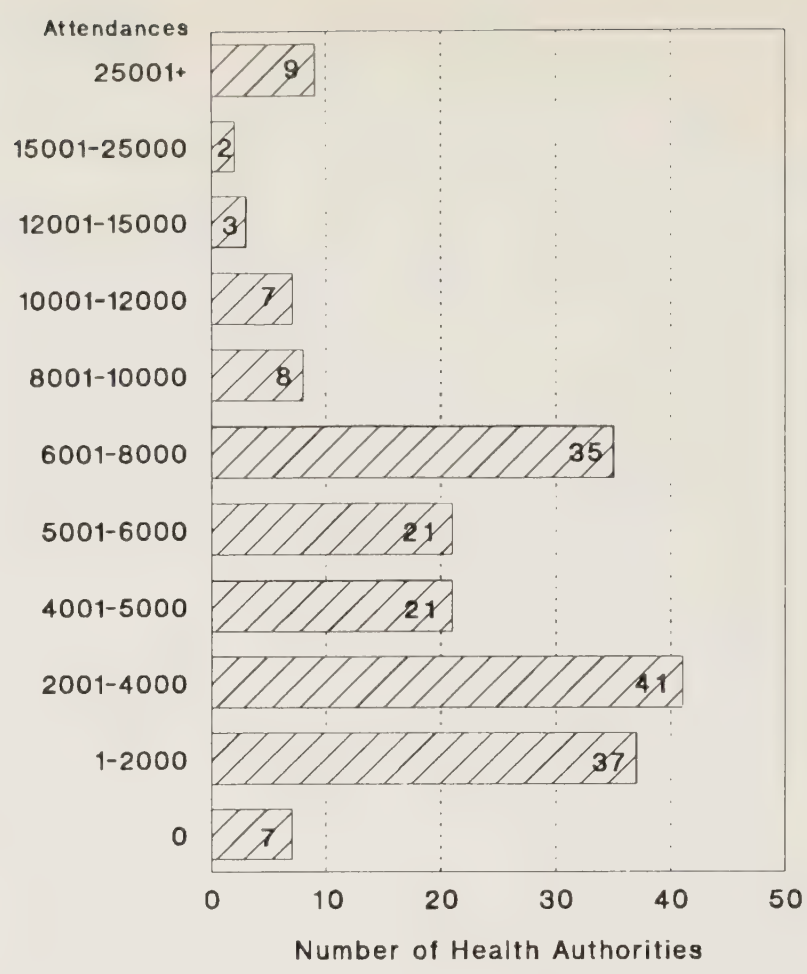


Figure 4 Oral surgery.

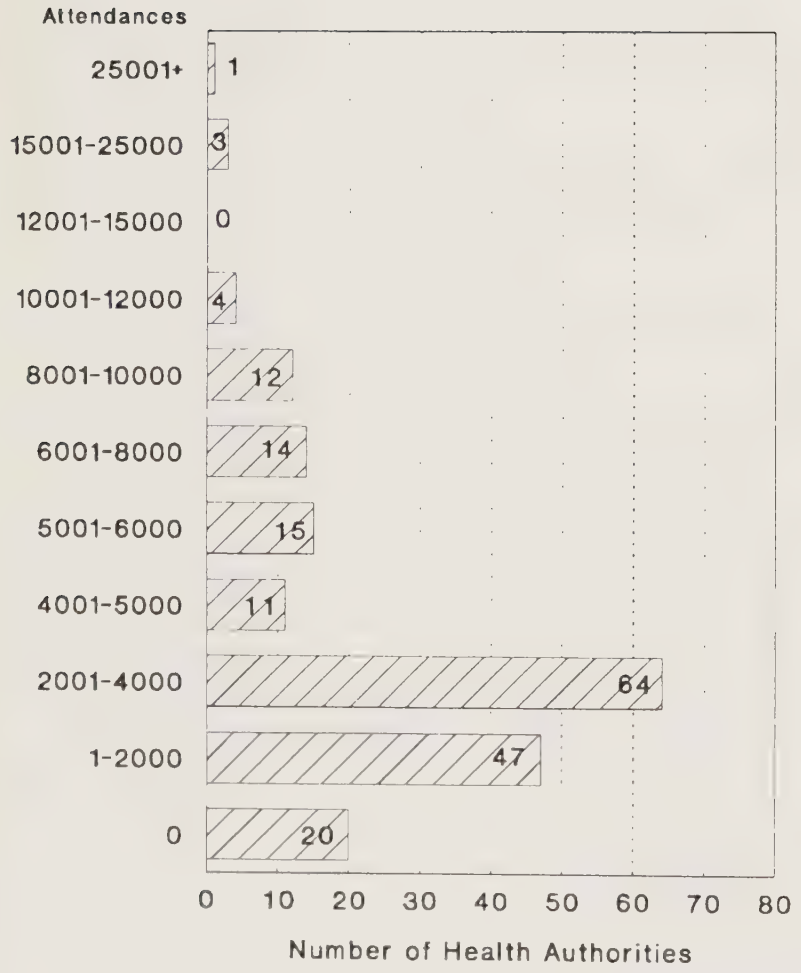


Figure 5 Orthodontics.

Notes:

1. The number to the right of each column is the number of health authorities with the indicated range of attendances.
2. Special Health Authorities are excluded (except for one specialist dental hospital).
3. Attendances for 'dentistry' are excluded.

Range of total out-patient attendances in England by health authority 1989/90

2.12 Cost information for three sizes of department, that is with 4, 5 and 6 chairs, is given in Chapter 7. This Supplement assumes that some spaces in the general out-patients department can be shared, if conveniently located, for example, the WCs (see paragraph 4.38), the cleaners' room (see paragraph 4.51) and the disposal hold (see paragraph 4.60). (See also paragraph 7.5.)

Main functions of an oral surgery and orthodontic department

2.13 The main functions of an oral surgery and orthodontic department include:

- specialist consultation, examination and treatment of patients;
- preliminary examination prior to day surgery or in-patient surgery;
- subsequent follow-up of out-patients and day-patients;
- making plaster study models and constructing splints, prostheses and orthodontic appliances;
- discharging patients from the care of the hospital, with referral if necessary to other health care services;
- postgraduate training and clinical attachments for general dental practitioners.

Clinical management of patients

2.14 Clinical management of patients includes:

- advice and/or treatment planning, which may involve computerised and manual techniques, and include joint assessment by the oral surgeon and the orthodontist;
- radiography, that is intra-oral X-rays, ortho-pantomographs, cephlostats and other X-rays;
- taking plaster study models, or impressions for, and fitting of, splints, prostheses and orthodontic appliances;
- surgery of the mouth, for example, extraction of teeth, excision of soft tissue and removal of jaw tissue. The surgery may be performed with the patient under local anaesthesia, relative analgesia or intravenous sedation.

Future trends in oral surgery

2.15 Future trends in oral surgery are likely to include:

- an increase in the level of more complex maxillo-facial surgery, continuing the move from less complex dental surgery. As a result, more routine consultations and less operative work will be carried out in the department;
- an increase in the number of treatments carried out as day surgery cases;
- increased use of sedation instead of general anaesthesia.

Future trends in orthodontic services

2.16 There is a rising demand for orthodontic treatment. Ways and means of accommodating the additional workload may include:

- an extension of the out-patient service, which may be achieved by the training and appointment of more consultants in orthodontics and the appointment of auxiliary staff who can carry out the less complicated procedures under their supervision;
- the provision of an extended range of orthodontic procedures by general dental practitioners, working to treatment plans prepared by a consultant orthodontist. Training may be acquired as an undergraduate and/or as a clinical assistant attached to a consultant orthodontist working in an oral surgery and orthodontic department.

Future trends in restorative dentistry

2.17 There will be an increasing number of consultants in restorative dentistry working in a District General Hospital. The increase in the elderly population will result in a greater number of referrals for advice on, or treatment of, complex restorative and prosthetic problems over and above those from other age groups.

Control of infection*

2.18 The need to prevent cross-infection is an important criterion when planning, designing and equipping oral surgery, orthodontic and restorative dentistry departments. High standards of hygiene are essential in all areas. This Supplement and associated activity data sheets take account of, for example:

- workflow;
- separation of incompatible activities;
- assembly and layout, including accessibility, of equipment;

---

* Account should be taken of guidance included in HC(91)33 – 'Decontamination of Equipment, Linen or Other Surfaces Contaminated with Hepatitis B and/or Other Human Immunodeficiency Viruses' and 'The Recommendations of the Expert Advisory Group on Aids' given in 'Guidance for Clinical Health Care Workers', January 1990.

- specific items of equipment required in connection with sterilization and disinfection processes;
- provision of adequate handwashing and drying facilities;
- handling of sharps and the use of "sharps" containers, as recommended in BS7320;
- finishes.

2.19 Careful consideration should be given to the provision of facilities for washing, disinfecting and sterilizing instruments (see paragraph 3.20). It is essential that bench-top sterilizers conform to BS3970, Part IV, in respect of the sterilization of unwrapped instruments and that they are maintained in accordance with the recommendations made in Health Technical Memorandum 10.

2.20 Project teams should consult the local Control of Infection Officer in respect of requirements for the control of infection and prevention of cross-infection.

Health and safety

2.21 Account should be taken of the requirements of relevant sections of the guidance dealing with the 'Control of Substances Hazardous to Health', issued with EL(89)MB/185, and the guidance dealing with the protection of persons against ionizing radiations arising from dental use, contained in HC(89)18.

Maxillo-facial, prosthetic and orthodontic appliance laboratory

2.22 The provision of a maxillo-facial, prosthetic and orthodontic appliance laboratory is a normal part of every oral surgery and orthodontic department. Provision of splints, prostheses and orthodontic appliances is an integral part of the service. Oral surgeons and orthodontists take impressions of patients' mouths and prescribe splints, prostheses and appliances which are then constructed by maxillo-facial or orthodontic technicians. Consultants in restorative dentistry may similarly require construction of prostheses or crowns and bridges.

2.23 It is important that there is effective communication between clinicians and technicians so that they can discuss with each other the requirements of patients before and during the construction process.

2.24 A maxillo-facial, prosthetic and orthodontic appliance laboratory is an "industrial" workplace and will not normally be attended by patients. It is defined as a "factory" by The Factories Act 1961 and compliance with this legislation and associated health and safety legislation is mandatory. If a technician needs to be consulted about a patient's appliance during a consultation/examination/ treatment session, then a consulting/treatment room should be used.

3.0 General functional and design requirements

Introduction

3.1 Chapter 3 of Health Building Note (HBN) 12 – 'Out-patients department', as appropriate, and as modified and amplified by this chapter, provides design guidance and information on a range of topics and environmental matters which should be taken into account when designing an oral surgery and orthodontic department. Other environmental topics are described in Chapter 5 of HBN 12.

Planning and design

3.2 Accommodation for oral surgery and orthodontic and restorative dentistry departments should be planned and designed to the same standard as that described in HBN 12 for general out-patient purposes.

3.3 Patients attending oral surgery and orthodontic and restorative dentistry departments, particularly for the first time and for surgical treatment, may be apprehensive and every effort should be made to reassure them. The general atmosphere in the department should be open, pleasant and friendly: this will help both patients and staff feel at ease. Furnishings and lighting should contribute to creating a relaxed and comfortable environment.

Location and relationships

3.4 Oral surgery and orthodontic and restorative dentistry departments should be part of the general out-patients department (OPD) of a District General Hospital (DGH). Figure 6 illustrates key locational relationships. It should also be noted that:

a. this Supplement assumes that the health records department is responsible for the safe-custody of dental case notes and dental X-rays, and for providing a service to the oral surgery and orthodontic department in a similar way to clinics in the general OPD. It is necessary, therefore, that the two departments are easily accessible to each other;

b. patients from the accident and emergency department may need to attend the oral surgery and orthodontic department during both the day and the night.

Accommodation in an oral surgery and orthodontic and restorative dentistry department

3.5 The spaces required in an oral surgery and orthodontic and restorative dentistry department are shown in Figure 7.

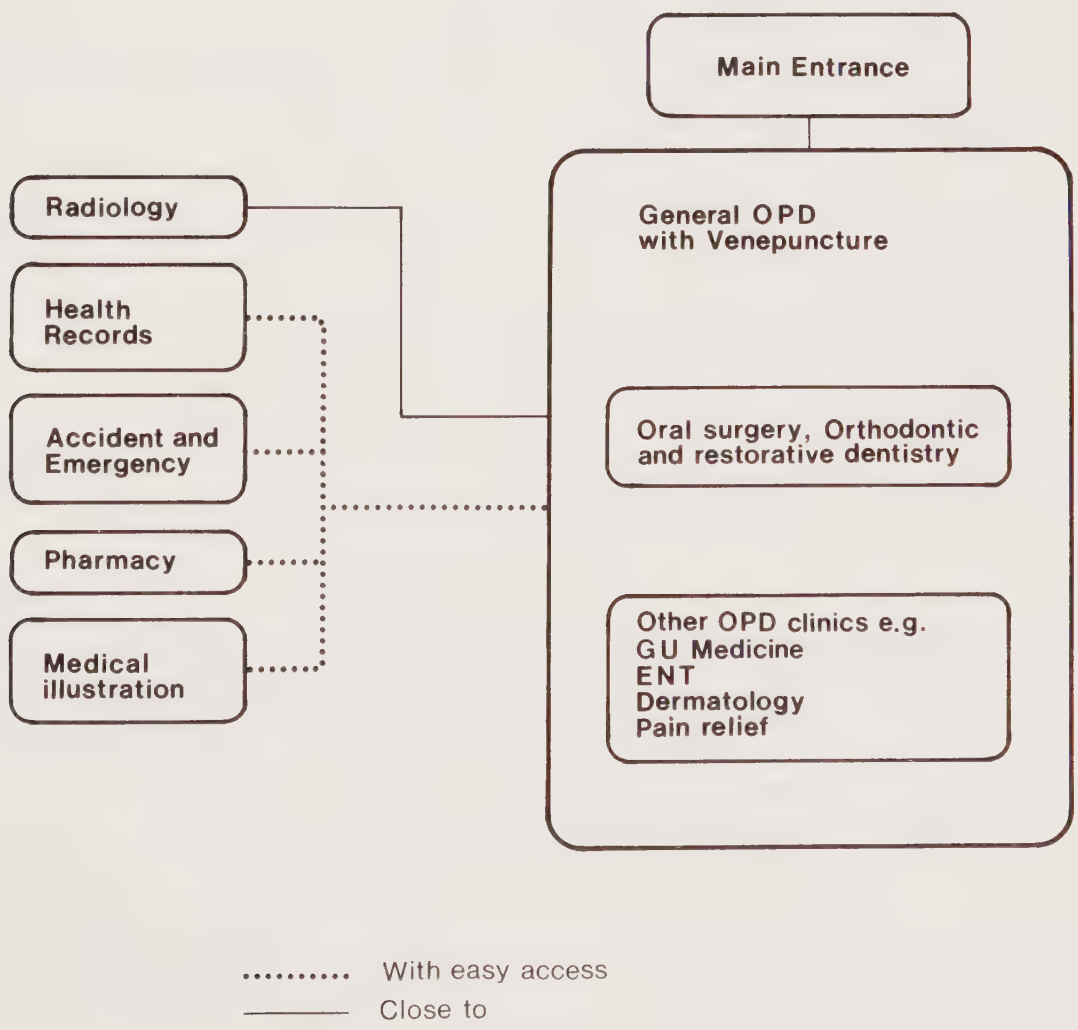
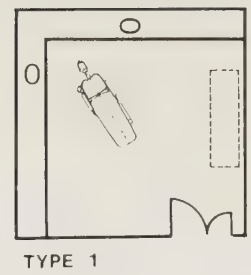


Figure 6 Relationship of main hospital departments to Oral surgery, Orthodontics and Restorative dentistry.

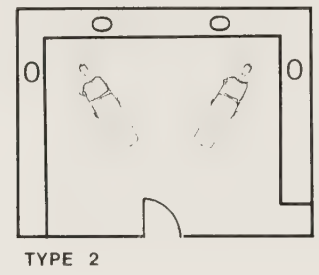
PATIENT AREAS	UTILITY/ SUPPORT SPACES	STORAGE/ SUPPLIES
Entrance	Offices	Equipment Store
Reception and Registration	* Treatment Planning Work – Station	Stationery Cupboard
Waiting area	Staff Rest/ Beverages	General Store
Consulting/ Examination Room	* Utility	Disposal Hold
* Consulting/ Treatment Room	Clean Utility	* Study Model Store
* Recovery Room	Staff WC	* Laboratory Store
Children's Play Space	Cleaners Room	
Nappy Change	Switch Room	
WC's (inc. disabled)	* Maxillo-facial, Prosthetic and Orthodontic Appliance Laboratory	

Figure 7 Spaces required in Oral surgery, Orthodontic and Restorative dentistry.
(*Spaces specific to this department)



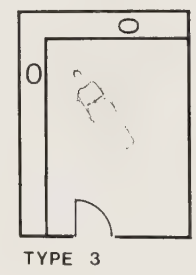
CONSULTING/TREATMENT ROOM FOR ORAL SURGERY with space for Patient Trolley

One dental chair



CONSULTING/TREATMENT ROOM FOR ORTHODONTICS

Two dental chairs



CONSULTING/TREATMENT ROOM FOR ORAL SURGERY/ORTHODONTICS

One dental chair

Figure 8 Types of Consulting/Treatment room for use by Oral surgery, Orthodontics and Restorative dentistry.
(not to scale)

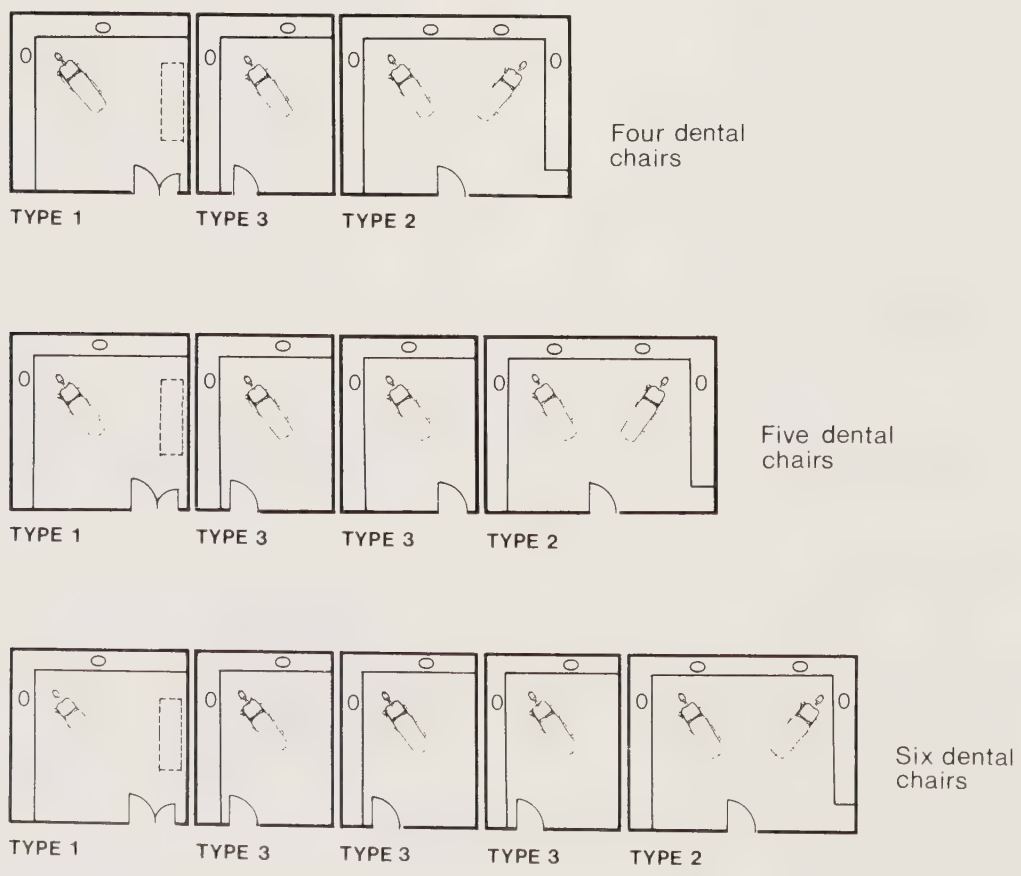


Figure 9 Combination of Consulting/Treatment rooms in three sizes of oral surgery and Orthodontic department.

3.6 Specific spaces in an oral surgery and orthodontic and restorative dentistry department, which are not described in HBN 12, are:

a. consulting/treatment rooms;

b. recovery room;

c. treatment planning work-station;

d. utility room;

e. maxillo-facial, prosthetic and orthodontic appliance laboratory;

f. laboratory storage;

g. study model storage.

Combined consulting and examination room

3.7 A conventional combined consulting and examination room (C/E room) should be provided in an oral surgery, orthodontic and restorative dentistry department to accommodate the increasing number of patients who attend for consultation and examination only. Without the clinical (and expensive) treatment facilities of a consulting/treatment room (see paragraph 3.8), a C/E room provides a "friendlier" environment for patients. This is particularly important in the case of children and first-time attenders. A minimum of one C/E room is required. In larger departments, depending on the type of work, project teams may choose to provide a second C/E room and one less consulting/treatment room.

Combined consulting and treatment rooms

3.8 Combined consulting/treatment rooms are required for consultation, examination and treatment and take the place of C/E rooms and separate treatment rooms in the general OPD.

3.9 A minimum of three consulting/treatment rooms of different types should be provided which cater for the needs of:

a. **oral surgery.** Oral surgery tends to require a higher degree of patient privacy then orthodontics and, therefore, a consulting/treatment room with a single dental chair is most appropriate for its practise (see Figure 8, Type 1);

b. **orthodontics.** A consulting/treatment room with two dental chairs is appropriate for orthodontics (see Figure 8, Type 2). Child patients can gain confidence from the presence of another patient in a nearby chair. The arrangement also enables junior and auxiliary staff to work under the direct supervision of a consultant and improves the patient throughput;

c. both oral surgery and orthodontics (with a single chair) (see Figure 8, Type 3).

3.10 The three types of consulting/treatment room are suitable for the clinical practice of oral surgery, orthodontics and restorative dentistry and may be used flexibly. The consulting/treatment rooms can also be used for combined oral surgery and orthodontic clinics and for dental hygiene (including health education).

3.11 Figure 9 illustrates the combination of consulting/treatment rooms in three sizes of oral surgery and orthodontic and restorative dentistry department. Other combinations with more than two chairs are possible.

3.12 Project teams will need to decide whether or not to provide interconnecting doors between consulting/treatment rooms. The advantages of interconnecting doors include ease of access for discussion between clinicians and the supervision of junior and auxiliary staff: also, staff can move between rooms without being seen by waiting patients. Disadvantages are that staff using them may intrude on patient privacy, sound containment is difficult to achieve and there is less flexibility for locating wall-mounted fixtures and fittings, and for parking equipment. Interconnecting doors also tend to produce a "double corridor".

3.13 Occasionally, accident and emergency patients and in-patients may have to be brought to the oral surgery and orthodontic and restorative dentistry department on a trolley. In order to facilitate this, there should be ease of access from the accident and emergency department and the wards. There should also be space to manoeuvre a trolley in one consulting/treatment room.

3.14 Intra-oral X-rays are required mainly by an oral surgeon during a consultation/examination/treatment session and are often taken and processed in the oral surgery and orthodontic and resorative dentistry department (see paragraph 3.21). A mobile dental X-ray set, together with a mobile rack for a lead apron for use by the patient, should be parked in the Type 1 consulting/treatment room.

3.15 Ortho-pantomographs, cephlostats and other X-rays are normally taken and processed in the radiology department.

3.16 Space for clerical work should be provided in each consulting/treatment room.

Recovery room

3.17 A recovery room is required where patients can lie down or sit and rest following oral surgery.

3.18 The recovery room should be located adjacent to the Type 1 consulting/treatment room (where most of the acute oral surgery treatments are performed) and so that patients being moved from this consulting/treatment room to the recovery room cannot be seen by waiting patients. Access for a patient trolley is required.

Treatment planning

3.19 A treatment planning work-station is required in the oral surgery and orthodontic and restorative dentistry department.

Utility room

3.20 A large number of instruments are used in the practice of oral surgery and orthodontics and restorative dentistry and need to be reprocessed. It is preferable for the instruments to be disinfected or sterilized in a sterile services department (SSD). However, in view of the very high turnover of some instruments and the cost of others, provision may be made to reprocess a limited range of items in the department.

3.21 Intra-oral X-rays taken in the consulting/treatment rooms should be developed by a daylight process in the utility room.

Maxillo-facial, prosthetic and orthodontic appliance laboratory

3.22 The laboratory accommodates separate work areas for the different processes in the construction of splints, prostheses and orthodontic appliances, as follows:

a. wire, wax and acrylic work area;

b. plaster work area;

c. flasking and polishing work area;

d. metal casting work area;

e. ceramic work area (Optional accommodation).

Laboratory store

3.23 A store is required for laboratory sundries.

Study model storage

3.24 Prostheses and orthodontic appliances which fit into a patient's mouth or onto a tooth are made in the maxillo-facial, prosthetic and orthodontic appliance laboratory on a plaster study model of the part of the mouth concerned. A study model is made from an impression of the mouth by pouring dental stone into the impression. The study model is then an exact copy of the patient's mouth so that a prosthesis or an appliance made to fit the study model should also fit the mouth.

3.25 Study models are part of a patient's health record. If a clinician decides that they need to be retained then guidance on minimum periods for retention of records contained in Department of Health Circular HC(89)20 will be relevant. At the completion of treatment, local policies may permit patients to hold their own study models, providing they are not required for audit or training purposes.

3.26 Study model storage is required where plaster study models in boxes can be stored for the necessary period.

Other spaces in an oral surgery and orthodontic and restorative dentistry department

3.27 Other spaces in an oral surgery and orthodontic and resorative dentistry department (not identified as specific spaces in Figure 7) are described in HBN 12, where necessary, modified and amplified in Chapter 4.

Data transmission

3.28 Provision should be made for the installation of computer terminals at the reception and registration desk, in all consulting/treatment rooms, at office work-stations and at the treatment planning work-station.

4.0 Specific functional and design requirements

Introduction

4.1 This chapter must be read in conjunction with Health Building Note (HBN) 12 – 'Out-patients department', for the description of general out-patients department (OPD) accommodation. The specific functional requirements and design implications for spaces in an oral surgery and orthodontic and restorative dentistry department are described below.

4.2 Lists of activities and equipment and details of environmental conditions and finishes of walls, floors and ceilings are presented in the activity data sheets (Chapter 8 of this Supplement and Chapter 8 of HBN 12).

Reception desk

4.3 A reception desk is required where:

a. patients can be received and registered;

b. re-appointments, and appointments with other clinics, can be made;

c. health records can be stored, usually in a trolley, for the duration of a clinic session;

d. telephone(s) and computer terminal(s) may be used.

Some of these activities will need to be carried out in private.

4.4 The reception desk should be located adjacent to the waiting area and reasonably close to the consulting/examination and consulting/treatment rooms. The receptionist should be able to observe these rooms and the patients waiting. The office for secretarial staff may be combined with the reception desk.

Waiting area

4.5 The waiting area should provide a pleasant environment where patients can sit and relax prior to an appointment. It should be adjacent to the reception desk and have easy access to the consulting rooms. WCs should be available nearby.

4.6 There should be a variety of seating and adequate space for patients in wheelchairs. Seating should not be placed immediately outside consulting/treatment rooms.

4.7 It may be desirable for a large waiting area to be designed into smaller seating areas in order to group certain patients, for example, children, or those waiting for oral surgery or orthodontics. This may be achieved in a single space by appropriate arrangement of seating, different chair colours, indoor planting and use of screening.

4.8 The size of the clinic waiting area is affected by:

a. the number of patients attending the clinics;

b. the number of escorts and where they wait;

c. the number of patients in wheelchairs.

4.9 A clinic waiting area should not be oversized merely to cope with the occasional build-up of patients. Locating two clinic waiting areas adjacent to each other may facilitate overspill arrangements by allowing shared use.

4.10 A variety of reading material should be available. Project teams may also wish to consider the provision of low level background music and/or a video system. This may help patients to relax, alleviate the boredom of waiting, particularly for children, and mask confidential discussions.

Children's play space (and push-chair park)

4.11 A play space should be provided for children who are patients or who are accompanying adult patients. Young children should be able to play or read in safety without disturbing adult patients.

4.12 The play space should be located:

a. so that playing children can be easily supervised by adults in the clinic waiting area;

b. as close as possible to the nappy changing room in the general OPD.

4.13 A small parking space or store for push-chairs should be provided.

Combined consulting/examination room

4.14 HBN 12 describes a combined consulting and examination room (see paragraphs 4.19 to 4.23 in that Note).

Consulting/treatment rooms

4.15 The need to provide three types of consulting/treatment room is described in this Supplement in Chapter 3

(see paragraphs 3.8 to 3.16 and Figure 8). Specific requirements of each type of consulting/treatment room are discussed in paragraphs 4.16 to 4.18. General requirements for consulting/treatment rooms are considered in paragraphs 4.19 to 4.23.

Type 1 consulting/treatment room

4.16 The Type 1 consulting/treatment room should be planned and designed to suit specific needs for oral surgery. It should:

a. include one dental chair;

b. have space to park the mobile X-ray set (as it will be used here mostly) and space to enable patients to be treated on a trolley when required;

c. include a dental examination/operating lamp with extendable arm so that it can be used with a patient on a trolley;

d. be adjacent to the recovery room, if possible.

Type 2 consulting/treatment room

4.17 The Type 2 consulting/treatment room should be planned and designed to suit specific needs for orthodontics. It should include:

a. two dental chairs, which may face the same direction or face each other (see Figure 10);

b. dental cabinetry, dental units, dental examination/ treatment lamps and service outlets arranged so that two orthodontists may work at the same time. Appropriate fixtures, fittings and equipment may be accommodated on an island unit located between the two dental chairs.

Type 3 consulting/treatment room

4.18 Type 3 consulting/treatment rooms should be planned and designed so that they are suitable for use for both oral surgery and orthodontics. They may be used in conjunction with the Type 1 or Type 2 room and, ideally, should be located between them (see Figure 9 and Figure 11).

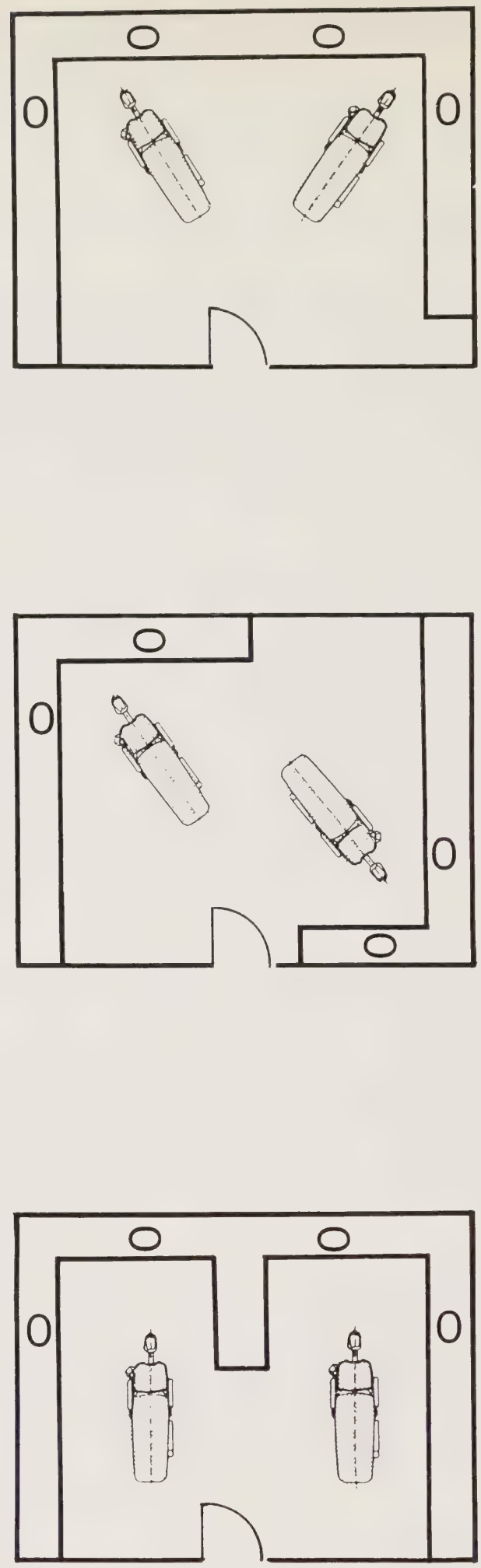


Figure 10 Diagram to show some possible layouts for Orthodontic two chair Consulting/Treatment room.

General requirements

4.19 Consulting/treatment rooms should be planned and designed to facilitate:

a. ease of use;

b. operational efficiency;

c. implementation of control of cross-infection procedures.

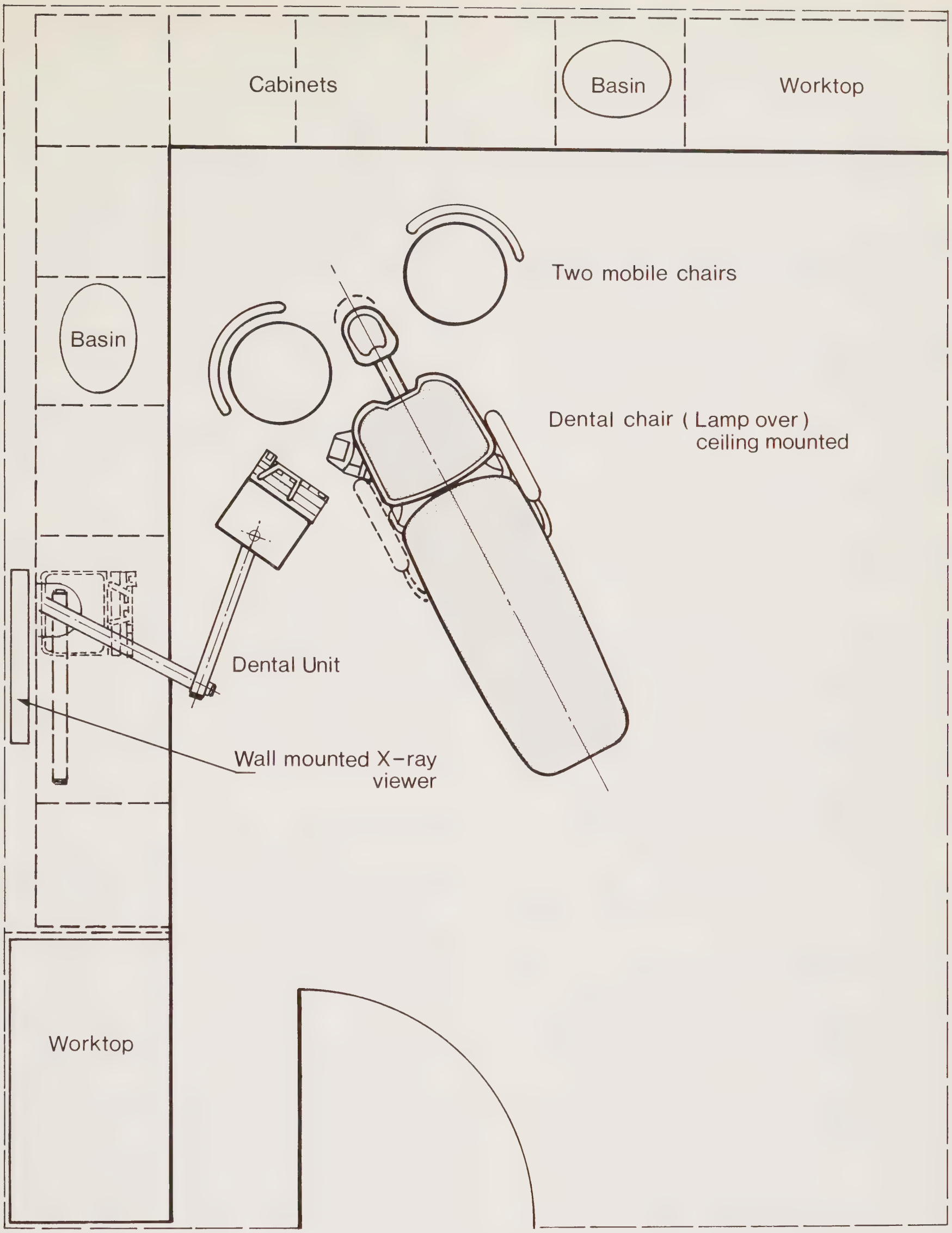


Figure 11 Typical layout of a consulting/treatment room, showing location of dental chair, dental unit and cabinetry (for illustrative purposes only).

4.20 Key factors which affect these requirements include:

- the size and shape of the room;
- the types and positions of fixtures, fittings, and cabinetry;
- the types and position(s) of the dental chair(s) and associated equipment.

4.21 The design of consulting/treatment rooms should enable staff to adopt optimum working positions around a patient seated in a dental chair when carrying out oral surgery, orthodontic and restorative dentistry procedures.

4.22 Space should be provided for parking mobile equipment and equipment on trolleys in consulting/ treatment rooms.

4.23 Figure 11 illustrates a typical layout of a consulting/treatment room showing the location of the dental chair, dental cabinetry and dental unit.

Dental chair

4.24 The position of the dental chair in the consulting/ treatment room is critical. It should be located so that access to the chair is both easy and obvious to a patient. The position of the dental chair will also affect the position of:

a. the dental cabinetry, incorporating clinical handwash basins (see paragraphs 4.25 to 4.27);
b. the dental unit (see paragraphs 4.28 to 4.30);
c. the dental examination/operating lamp (see paragraph 4.31);
d. the service outlets (see paragraphs 4.32 and 4.33).

Dental cabinetry

4.25 Dental cabinets are items of surgery furniture which have fitted drawers and cupboards specially designed to take dental instruments and other items which may be needed at the chair-side. Dental cabinets are usually available in modules which can be assembled and fitted with a continuous worktop with coved upstand to facilitate cleaning.

4.26 A dental unit may be fitted into a cabinet or parked between cabinets under the worktop. Inset clinical handwash basins, with appropriate taps, should be provided at convenient locations. Other equipment and appliances may be built into cabinets.

4.27 Two separate areas are required in consulting/ treatment rooms for clerical tasks, such as completing patient health records. These may be provided as modules of the dental cabinetry. To help prevent cross-infection, the surfaces must be separate from those used for clinical purposes.

Dental unit

4.28 Powered instruments and accessories are usually combined together in a dental unit. Dental units may be mounted on a small mobile pedestal, on an adjustable bracket arm extending from a fixed floor pedestal, on the dental chair, or fitted into a cabinet.

4.29 The dental unit should be positioned so that it is easily accessible to the oral surgeon, orthodontist or restorative dentist during the examination or treatment process.

4.30 Other instruments and accessories may be used from an instrument trolley.

Dental examination/operating lamp

4.31 A dental examination/operating lamp is required whose beam illuminates the patient's mouth. The lamp may be mobile, or integral with the dental chair or dental unit, or fixed to the wall or ceiling. This Supplement assumes that one ceiling-mounted lamp is provided with each dental chair: ceiling track is not considered necessary. The ceiling-mounted lamp is preferred as it is less likely to inhibit the movement of staff around the dental chair.

Service outlets

4.32 Medical oxygen and medical vacuum should be piped to wall-mounted outlets close to the dental chair. The dental unit requires compressed air, water, drainage and an electrical supply. Connections to the compressed air and water systems should incorporate devices to prevent any suck-back from dental hand pieces and 3-in-1 syringes. In the case of a chair with an attached spittoon or integrated dental unit, these services will have to be ducted to the chair.

4.33 A dental vacuum system should be provided to serve the dental aspiration equipment at each chair. This removes from the patient's mouth saliva and water used to flush away debris arising from treatment, or to cool modern high speed dental tools. This system should incorporate devices capable of filtering and removing liquid and solid particles from the air flow and then venting the air through a centrifugal type exhauster, with the filtered aspirate being allowed to flow away to a drain. Its performance characteristic is a comparatively high air flow with only a small degree of vacuum to reduce the risk of tissue damage. (This dental vacuum system is entirely separate from the medical vacuum system. The latter has the performance characteristic of a comparatively low air flow, with a high degree of vacuum, which is more suitable for effecting rapid

removal of vomit or blood from large-scale bleeding.) The dental vacuum system is usually product specific, and therefore supplied as an accessory with the dental chairs and aspiration equipment, but it should be designed, installed, tested and subsequently serviced to comply with the detailed recommendations contained in BS5185:1975 – 'Dental Vacuum Pipeline Systems'.

4.34 As general anaesthesia, as well as relative analgesia, may be administered occasionally in the Type 1 consulting/treatment room, an active gas scavenging system should be provided (see paragraph 6.17). It is not possible to ensure that the dental units and associated accessories are sparkproof, therefore only non-flammable anaesthetic gases must be used and anti-static floors will not be required. If anaesthetic gases are derived from portable cylinders, stocks of medical gases cylinders should not be stored within the department. Cylinder supplies will usually be obtained from, and empties returned to, the pharmacy department, when required.

Recovery room

4.35 A recovery room with three curtained cubicles, two to accommodate recovery trolleys and one to accommodate an arm chair, is required. Oxygen and medical vacuum should be provided to wall-mounted outlets at the head of each position.

4.36 Patients may arrive on a trolley, in a wheelchair or on foot but most will leave on foot. There should be adequate space to manoeuvre trolleys.

4.37 Mobile equipment which may be used in the recovery room includes an examination lamp, an infusion stand and a dressing/instrument trolley. The cardiac resuscitation trolley for use in the department may be parked in this room.

WCs

4.38 Separate WCs, with facilities for handwashing and grooming, should be provided for male and female patients. It is assumed that the wheelchair WC, staff WC and nappy changing room in the general OPD will be convenient for use by people in the oral surgery and orthodontic department (see also paragraph 7.5).

Offices

4.39 Offices are required as indicated below: the different types of office work-stations are fully described in HBN 18 – 'Office accommodation in health buildings':

a. single-person offices for the consultants, with Type 3 office work-stations;

b. a single-person office for the sister/charge nurse, with a Type 4 office work-station;

c. a multi-person office, with Type 4 office work-stations for junior dental staff;

d. a multi-person office, with Type 5 office work-stations for secretarial staff. This office may be combined with the reception desk.

Treatment planning work-station

4.40 A work-station for treatment planning may be provided as part of one of the offices in the oral surgery and orthodontic and restorative dentistry department (see paragraph 4.39), or in a separate office. The treatment planning work-station will be used by clinicians for joint assessment and planning operations, and also for training purposes.

4.41 A worktop will accommodate the computerised digitiser and plotter. An X-ray viewer, a filing cabinet and a lockable cupboard for the storage of photographic equipment will also be required.

Staff rest room

4.42 A staff rest room should be provided where staff can sit and relax during breaks. Facilities are required for making beverages, washing-up and separate hand-washing, together with storage for a small amount of crockery and cutlery. Furniture and equipment will include semi-easy chairs, occasional tables, and "cube" lockers where small items of personal belongings can be stored.

Utility room

4.43 Main functions of the utility room include:

- disposal of liquid waste;
- cleaning dressing trolleys and other items of equipment;
- temporary holding of materials for reprocessing or disposal. Prompt removal of bags to the collection point will preclude obstruction of the activity space and a build-up of odours;
- daylight processing of intra-oral X-rays.

4.44 The room should be planned and designed to facilitate workflow from dirty to clean activities. If "used" instruments are to be reprocessed in the utility room (see paragraph 3.20), they should be brought to the room on a trolley, thoroughly washed in a sink, further washed in an ultrasonic cleaner and, as appropriate, disinfected in a glutaraldehyde (or similar substance) bath or sterilized in a small bench-top autoclave, prior to passing to the clean

utility room for packing and storing. Toxic vapours produced during the disinfecting process should be removed via a local enclosure with mechanical extract ventilation to control the possibility of inhalation (see paragraph 6.11 for detailed recommendations). The autoclave should not be sited adjacent to the glutaraldehyde bath enclosure so that local convection currents generated by the autoclave do not affect the toxic vapour extract performance. It may be necessary to provide two small bench-top autoclaves in a larger department.

4.45 A small daylight processor, an adjacent small Belfast sink, and other facilities for the preparation and storage of radiographic supplies, are required in the utility room.

4.46 The utility room should be located close to the consulting rooms and the clean utility room.

Clean utility room

4.47 The clean utility room is the storage and preparation area for:

a. all clean and sterile supplies, including instruments;

b. drugs, medicines and lotions which need safe-keeping; used in the treatment of patients;

c. dressing trolleys.

4.48 If instruments are sterilized and/or disinfected in the utility room, they will be transferred to the clean utility room to be reassembled if necessary, packed and stored. Equipment and materials required for packing may be stored on the worktop and on shelves.

4.49 If a Controlled Drugs cupboard is included then a repeater warning light should be installed in the reception office or other appropriate location.

4.50 The clean utility room should be located close to the consulting and examination and consulting/treatment rooms and the utility room.

Cleaners' room

4.51 It is assumed that domestic services staff who provide a cleaning service to the department will use the cleaners' room in the general OPD as a base (see also paragraph 7.5).

Switchroom or cupboard

4.52 A switchroom or cupboard is required to accommodate the electrical installation control equipment. The room should be dry and well-ventilated, and the door should be lockable and open outwards. If an electricity supply of adequate capacity is conveniently available from an existing switchroom, secure sub-distribution switchgear cupboards will suffice.

Maxillo-facial, prosthetic and orthodontic appliance laboratory

4.53 Principal functions of the five main work areas in the maxillo-facial prosthetic and orthodontic appliance laboratory include:

- **wire, wax and acrylic work area**
  A laboratory bench position provides the main work-station for technicians for bending and spot-welding stainless steel wire to produce clasps and springs, producing the wax stages of the process, and trimming and rough finishing of acrylic and metal appliances. A small office work-station for administrative and clerical tasks may be associated with this work area;

- **plaster work area**
  Storing, dispensing and mixing of plaster and dental investment, casting impressions, and wet trimming completed models;

- **flasking and polishing work area**
  Mixing, flasking, pressing/clamping and curing acrylic dough, and polishing completed appliances using a dental polishing lathe;

- **metal casting and finishing work areas**
  High temperature work is carried out here. Equipment will include a wax impregnating unit, an oven for removing wax, furnaces for heating casting rings, a centrifugal casting machine and a sandblaster;

- **ceramic work area (Optional Accommodation and Services)**
  Where a consultant in restorative dentistry attends the department, it may be necessary to provide a ceramic work area in the laboratory. The ceramic work area should be enclosed or in a small room to minimise the risk of dust from other parts of the laboratory contaminating the dental porcelains used to make ceramic crowns and veneers. A ceramic vacuum-firing furnace, which operates at very high temperatures, is the main piece of equipment used in the ceramic work area.

4.54 Appendices 3, 4 and 5 identify the main processes of a maxillo-facial, prosthetic and orthodontic appliance laboratory, a brief description of the activities relating to each of these processes, and where the activities are carried out.

4.55 The refilling of the plaster and investment dispensers

in the plaster work area may present a risk of injury to staff due to the weight of materials containers or packaging. Careful design and positioning of the dispensers may avoid this risk, otherwise consideration will need to be given to the provision of lifting aids.

Laboratory store

4.56 A small, separate store, with fixed shelving, should be associated with the maxillo-facial, prosthetic and orthodontic appliance laboratory. It should include a small refrigerator for materials which have to be stored at a low temperature.

Equipment store

4.57 An equipment store is required with floor space to park mobile equipment and shelves for the storage of loose items. The equipment store should have easy access, and ideally be close to, the consulting/treatment rooms. It may be possible to combine this equipment store with the one provided in the general OPD.

Stationery cupboard

4.58 A cupboard is required for items of stationery.

General store

4.59 Medical and surgical supplies in bulk should be held in a general store in support of stocks held in the clean utility room and working supplies in the consulting/treatment rooms. A general purpose trolley, a linen exchange trolley and a wheelchair can be parked here. It may be possible to combine this general store with the general supplies store in the general OPD.

Disposal hold

4.60 It is assumed that the disposal hold in the general OPD will be convenient for use by staff in the oral surgery and orthodontic and restorative dentistry department (see also paragraph 7.5).

Study model storage

4.61 Built-in cupboards with purpose-designed shelving are required for the storage of model boxes.

4.62 It is normal practice for plaster study models to be stored in a model box: dimensions of a typical box are 85 x 90 x 295mm. Separate boxes are used for each patient, and each box holds three pairs of models.

4.63 The quantity of model boxes to be stored will be affected by local policy with regard to:

a. patient-held records;

b. the period of retention of plaster study models.

4.64 The areas for storage included in the schedule of accommodation (see Chapter 7) of this Supplement will accommodate 2,000, 2,500 and 3,000 boxes.

4.65 In the future, use of a computerised visual imaging system may obviate the need to retain plaster study models.

5.0 Environmental and other topics

5.1 Chapter 5 of Health Building Note 12 contains guidance concerning aspects of function and design which are common to health buildings generally and which will need to be borne in mind when designing new buildings or up-grading existing premises. The guidance is relevant to the accommodation described in this Supplement.

6.0 Engineering services

Introduction

6.1 Most of the spaces required in the oral surgery, orthodontics and restorative dentistry department of a District General Hospital's (DGH) out-patients department (OPD) are described in Health Building Note 12. Therefore Chapter 6 of HBN 12 should be consulted for the engineering design criteria, materials specifications and reference data which are generally applicable to the accommodation described in this Supplement.

6.2 However, the consulting/treatment rooms, the recovery room, the appliance laboratory and some features of the utility room are specific to an oral surgery, orthodontics and restorative dentistry department. The engineering implications and services requirements associated with these spaces, which are additional to those included in Chapter 6 of HBN 12, are described in the following paragraphs.

Space requirements for services

6.3 The dental chairs in the consulting/treatment rooms normally have a base which is fixed securely to the floor. Designers should ascertain at an early stage the type of dental unit to be used and its position in the surgery (see paragraph 4.28), thus locating the point of termination for its services (see paragraphs 4.32 and 4.33).

6.4 A floor duct, with access covers above the services isolation valves, should be provided to house the engineering services to, and drainage from, the dental chairs and fixed floor pedestal type dental units. The permanent services should terminate with isolation valves at a suitable position within this floor duct, with flexible connections continuing to the chairs and units. Adequate access for maintenance and safe minimum distances between services should be provided.

MECHANICAL SERVICES

Heating

6.5 The general heating requirements for the oral surgery, orthodontics and restorative dentistry department will be similar to those for the OPD as this accommodation will not normally be in use at night and during week-ends. In those hospitals designated as accident centres, where oral surgery may be needed at night and during week-ends for the treatment of accident cases, the local heating circuit should be connected to a continuously available primary heating supply via a conveniently sited manual override time restricted switch so that it can be restored promptly to its full operational state.

Ventilation

6.6 Mechanical ventilation should be provided in the consulting/treatment rooms and the recovery area. The recommended air change rates (see activity data A-Sheets) for the Type 1 consulting/treatment room allow for the administering of relative analgesia and occasional general anaesthesia. The general ventilation requirements for these spaces will be similar to those for the OPD, as they will not normally be in use at night and during the week-ends. In those hospitals designated as accident centres, where oral surgery may be needed at night and during week-ends for the treatment of accident cases, the ventilation systems should be arranged so that conveniently sited time restricted manual over-ride controls can restore promptly their full operational state.

6.7 The possibility of excessive local solar, or other heat, gains in the consulting/treatment rooms, together with the need for staff to wear protective clothing during some prolonged oral surgery procedures, may require that the supply air to these rooms be mechanically cooled. Where this option is required the plant capacity should be limited to that necessary to maintain an internal temperature of 25°C when the external ambient is 28°C. Where deep planning of other continuously occupied spaces is unavoidable there will also be occasions when acceptable levels of comfort can only be maintained by air-cooling. Deep planning solutions however will be exceptional and no provision for this has been included in the Departmental Cost Allowances.

6.8 Mechanical supply and extract ventilation should be provided in the laboratory area. Extract hoods should be provided over the furnaces and over the designated bench areas used for welding, for impregnating or "burning out" wax and for casting noble metal or chrome cobalt appliances. Due to the predominantly intermittent use of these items of equipment and the relatively significant amount of extract ventilation each requires, the system should be arranged to have local control switches at each hood so that a considerably reduced rate of supply and extract ventilation is achieved when this equipment is not in use.

6.9 A ventilated fume cabinet should be provided for the storage, dispensing and mixing of monomer and powder

materials. This cabinet should be connected to a dedicated, continuously running extract system. Materials and components should be suitable for use with flammable solvent vapours.

6.10 Each polishing, grinding and sand blasting machine in the laboratory should be supplied with an integral hood and dust extract fan and will usually have a suitable filter to permit the extracted air to be re-circulated into the room. Similarly, the work-stations used by dental technicians will usually be supplied with a small integral dust collection unit, having a suitable filter to permit air re-circulation into the room, in order to control the potential dispersion into the technician's breathing zone of monomer and other dusts which will arise during hand finishing and fitting of appliances.

6.11 In the utility room, an open-fronted cabinet with mechanical extract ventilation should be provided to enclose the bath used for disinfection and thus control the potential dispersion of glutaraldehyde (or similar) vapour into the breathing zone of an operative undertaking disinfection procedures. The upper edge of the access opening should be as low as practicable, but may also be fitted with a self-closing flexible or sliding upper section to increase access when installing, removing or refilling the bath. In order to provide optimum air movement control, it is recommended that the extract connection be taken via a suitable low-level linear grille from the rear of the cabinet, rather than from the top, and that a minimum face velocity of 0.5m/second be achieved at the front of the enclosure. Additional and separate extract ventilation may also be required to deal with the heat gains from the bench mounted instrument sterilizer.

Hot, cold and drinking water services

6.12 In addition to the normal domestic hot and cold water supplies, a separate non-pressurised gas or electric water heater, capable of supplying boiling water, should be provided over the sink in the plaster bay of the laboratory area. This sink should also be fitted with a wax trap.

6.13 In the consulting/treatment rooms, a cold water supply should be provided for the dental unit (see also paragraph 4.32) and for the ultrasonic scaler.

Natural gas service

6.14 A piped supply will be required for outlets in the laboratory area. These outlets should preferably be of the self-sealing type which accept probe terminations on flexible hoses or other connections.

6.15 If a convenient supply of natural gas is not available liquid petroleum gas cylinders may be used but in this event care must be taken to ensure that the correct type of burner is provided. Special precautions are required for the external storage of cylinders of flammable gas. Detailed guidance on this aspect is given in the 'Code of practice for the storage of medical, pathology and industrial gas cylinders' issued with WKO(85)1 – in Wales, CAWO(85)1. (The Departmental Cost Allowances assume that a piped natural gas supply is available.)

Piped medical gases and vacuum

6.16 One oxygen and one medical vacuum point should be provided in each consulting/treatment room. An oxygen point and a medical vacuum point should be provided at each recovery position in the recovery room.

6.17 In the Type 1 consulting/treatment room, where nitrous oxide could be administered occasionally, an anaesthetic gas scavenging terminal should be provided. This should be connected to an active disposal system in accordance with the recommendations of BS6834. As nitrous oxide is required only occasionally, it may be obtained from portable cylinders. However, a piped nitrous oxide supply from the hospital's central medical gases system could be provided, if this is conveniently available nearby, thus permitting economic connections to be made.

6.18 When it is inconvenient to supply the dental department with oxygen from a central system in the hospital this gas may be supplied by the use of a manifold installation serving this department only. A manual manifold should be adequate for departments where the oral surgical sessions do not exceed eighteen per week. Where the oral surgical sessions exceed this number each manifold should be provided with automatic change over from the "duty" to the "reserve" bank of cylinders. Visual and audible warning of the state of supply should be given and in the case of automatic manifolds this warning should be repeated in the reception area.

6.19 Portable suction apparatus should be used where it is not convenient to connect the department to the hospital's central medical vacuum installation.

6.20 General guidance on the engineering standards for medical gas installations, including their terminal outlets, and the provision of, and accommodation for, manifolds is given in Health Technical Memorandum (HTM) 22 – 'Piped medical gases, medical compressed air and medical vacuum installations', and any subsequent published amendments.

Compressed air

6.21 Compressed air should be provided in each consulting/treatment room to supply the dental unit and a wall-mounted outlet for the use of portable tools. The pressure required at the dental unit is usually 3.0/4.0 Bar (45/60 psig). If the line pressure is higher than this it will be

necessary to fit a suitable reducing valve unless this is incorporated in the apparatus. A safety valve must be fitted on the lower pressure distribution pipework.

6.22 Similar provision should be made in the laboratory area for outlets at 5.5/7.0 Bar (80/100 psig) and at reduced pressures to suit equipment requirements. Gauges should be provided to indicate any reduced pressures at appropriate points.

6.23 The piped medical compressed air system may be used where convenient; otherwise a small compressor set to serve the department will be necessary. The compressor and its associated air receiver, driers, separators and other accessories should be located in a separate plant room with external access only to minimise noise in the department. The air intake should be sited in a dry position outside the plant room and be fitted with a silencer and filter as appropriate.

ELECTRICAL SERVICES

Lighting

6.24 In the consulting/treatment rooms, the recovery room and the laboratory area it is important that all light sources should have suitable colour rendering properties for clinical application.

6.25 The operating light for the dental units may either be fixed to the ceiling or wall, or form an integral part of the dental unit. Designers should ascertain the type to be used at an early stage.

6.26 The general lighting in the laboratory area should be supplemented by local bench lighting at each technician's work-station.

Socket-outlets

6.27 Fixed appliances in the laboratory area should be permanently wired from fused connection units. Appliances whose rating is in excess of 13 amps and the heater for dispensing boiling water in the laboratory area should be permanently connected, be supplied from separate final sub-circuits and be independently switched from a local isolator.

6.28 In the consulting/treatment rooms, splash proof plugs and socket-outlets (complying with classification IPX4 of BS5490:1985) should be provided in any services termination box in the floor duct to connect the permanent wiring with the flexible wiring incorporated in the dental chairs and dental units.

Provision for the use of mobile X-ray apparatus

6.29 Facilities for the use of mobile X-ray apparatus will be required in the consulting/treatment rooms. Normally dental X-ray apparatus can be used from any standard 13 amp socket-outlet with any standard 13 amp plug.

Call systems

6.30 Patient/staff and staff/staff call points should be provided at each trolley and patient chair position in the recovery room. Each call unit should comprise a push button, reassurance lamp and re-set switch. Calls should be annunciated in the sister's/charge nurse's office or at another suitable staff base, to suit project requirements.

7.0 Cost information

Introduction

7.1 For all types of health buildings, it is important that building costs and revenue expenditure are kept as low as possible, consistent with acceptable standards. Within this general context, Health Building Notes provide a synopsis of accommodation for health buildings which the Department of Health, in conjunction with the National Health Service, recommends for the provision of a given service.

Works cost

7.2 To prepare an estimate of the works cost for a scheme, reference should be made to the Capricode Health Building Procedures Manual (Chapter 1, Stage 1, Annex 1(c)). The total cost allowance for a scheme is derived by aggregating the cost of the functional units, Essential Complementary Accommodation (ECA) and Optional Accommodation and Services (OAS), as appropriate to the particular scheme.

7.3 The cost allowances cover the building and engineering requirements set out in this Supplement. In costing the oral surgery and orthodontic department, it has been assumed that it will form part of the general out-patients department (HBN 12) within a District General Hospital where the common use of services will be available.

Functional unit

7.4 The functional unit for this Supplement is the "dental chair". Three sizes of department have been costed accommodating 4, 5 and 6 dental chairs. The activity spaces and areas used for costing the functional units are listed in the Schedules of Accommodation at the end of this chapter.

Essential Complementary Accommodation

7.5 This comprises activity spaces which are essential to the running of the department but which in certain circumstances may be available in a convenient location elsewhere. This Supplement assumes that the following essential accommodation in the general out-patients department can be shared:

a. wheelchair WC, staff WC, nappy changing room (see paragraph 4.38);

b. cleaners' room (see paragraph 4.51);

c. disposal hold (see paragraph 4.60).

As this accommodation is already provided in HBN 12, it has not been costed separately for this Supplement.

Optional Accommodation and Services

7.6 This Supplement, where appropriate, draws attention to alternative ways of providing services or facilities, including the likely cost implications. This information will enable project teams to select the solution which is most suitable to their needs. The OAS in this Supplement and listed in the Schedules of Accommodation at the end of this chapter is for a ceramic work area in the appliance laboratory and an additional combined consulting/ examination room.

Areas

7.7 For development planning and at the earliest stage of a design, it may be convenient for designers to have data available which will enable them to make an approximate assessment of the sizes involved. For this reason the areas prepared for the purpose of establishing the cost allowances are included at the end of this chapter. It is emphasised that the areas published **do not** represent recommended sizes, nor are they to be regarded in any way as specific individual entitlements.

Circulation

7.8 Space for circulation, which includes allowances for planning provision, an engineering zone adjacent to the external walls, small vertical ducts and partitions, is shown in the Schedules of Accommodation and is included in the cost allowances.

Communications

7.9 Staircases, lifts and plant rooms, with the exception of an electrical switchroom, are not included in the cost allowances.

Engineering services

7.10 The following engineering services, as described in Chapter 6 and exemplified in the activity data, are included in the cost allowances. Primary engineering services are assumed to be conveniently available at the boundary of the department:

a. Mechanical services

Heating

Low pressure hot water system.

Ventilation

Mechanical supply and extract to meet clinical and functional requirements; other areas will be mainly naturally ventilated. Optional provision of air cooling to consulting/treatment rooms.

Cold water service

Centrally supplied to service points including drinking water and fire hose reels. Storage tanks excluded.

Hot water service

Centrally supplied to service points. Storage excluded. Local boiling water dispenser in plaster work area of appliance laboratory.

Natural gas service

Centrally supplied to service points in the appliance laboratory (if conveniently available – see paragraph 6.15).

Medical gases

Piped supplies of oxygen and vacuum to consulting/treatment rooms and recovery areas from the hospital centralised systems. Waste anaesthetic gas scavenging in Type 1 consulting/treatment room.

Compressed air

Piped supplies to consulting/treatment rooms and appliance laboratory from the hospital centralised systems.

b. Electrical services

General lighting as required by tasks.

Fluorescent, tungsten, safety and emergency luminaires, as appropriate.

Socket-outlets and other power outlets for fixed and portable equipment.

Supplementary equipotential earth bonding connections.

Standby and safety installations from the main hospital supplies.

Patient/staff and staff/staff call systems.

Fire alarm system.

Impulse clocks.

Staff location – extension to the hospital system.

Telephone internal cabling distribution and outlets. Handsets excluded.

Data transmission wireways only.

Schedules of accommodation

Para no.	Activity Space	Space area sq.m.	4 Dental chairs Qty.	4 Dental chairs Total area sq.m.	5 Dental chairs Qty.	5 Dental chairs Total area sq.m.	6 Dental chairs Qty.	6 Dental chairs Total area sq.m.
Patient areas								
4.3	Reception	5.50	1.0	5.50	1.0	5.50	1.0	5.50
4.5	Waiting	–	1.0	28.00	1.0	42.00	1.0	56.00
4.11	Children's play space	10.00	1.0	10.00	1.0	10.00	1.0	10.00
4.14	Consulting/examination room	15.50	1.0	15.50	1.0	15.50	1.0	15.50
4.16	Consulting/treatment room (Type 1)	22.50	1.0	22.50	1.0	22.50	1.0	22.50
4.17	Consulting/treatment room (Type 2)	29.00	1.0	29.00	1.0	29.00	1.0	29.00
4.18	Consulting/treatment room (Type 3)	17.00	1.0	17.00	2.0	34.00	3.0	51.00
4.35	Recovery room	20.00	1.0	20.00	1.0	20.00	1.0	20.00
4.38	WC	2.00	2.0	4.00	2.0	4.00	2.0	4.00
Utility/support spaces								
4.39	Consultant's office	10.00	2.0	20.00	2.0	20.00	3.0	30.00
4.39	Sisters'/charge nurses' office	9.00	1.0	9.00	1.0	9.00	1.0	9.00
4.39	Junior staff office	11.50	1.0	11.50	1.0	11.50	1.0	11.50
4.39	Secretarial office	–	1.0	12.50	1.0	12.50	1.0	18.50
4.40	Treatment planning office	8.00	1.0	8.00	1.0	8.00	1.0	8.00
4.42	Staff rest room/beverages	10.00	1.0	10.00	1.0	10.00	1.0	10.00
4.43	Utility room	11.50	1.0	11.50	1.0	11.50	1.0	11.50
4.47	Clean utility room	11.50	1.0	11.50	1.0	11.50	1.0	11.50
4.52	Switchroom	2.00	1.0	2.00	1.0	2.00	1.0	2.00
4.53	Maxillo-facial, prosthetic and orthodontic appliance laboratory	34.00	1.0	34.00	1.0	34.00	1.0	34.00
Storage/supplies								
4.56	Laboratory store	4.50	1.0	4.50	1.0	4.50	1.0	4.50
4.57	Equipment store	5.50	1.0	5.50	1.0	5.50	1.0	5.50
4.58	Stationery store	1.50	1.0	1.50	1.0	1.50	1.0	1.50
4.59	General store	6.00	1.0	6.00	1.0	6.00	1.0	6.00
4.61	Study model storage	–	1.0	5.50	1.0	6.50	1.0	7.50
	Nett total			304.50		336.50		384.50
	Circulation etc.			136.50		151.00		172.50
	Total			**441.00**		**487.50**		**557.00**
	Departmental areas			440 sq.m.		490 sq.m.		555 sq.m.

Optional Accommodation and Services

Para no.	Activity Space	Space area sq.m.	Circn. etc. sq.m.	Total area sq.m.
4.14	Consulting/examination room	15.50	7.00	22.50
4.53	Ceramic work area	4.00	2.00	6.00
	Air cooling to consulting/treatment room	No additional area required		

8.0 Activity Data

8.1 All Activity Data A-Sheets for this department are listed below. Chapter 8 of Health Building Note 12 contains an outline description of the "Activity Data" system.

List of Activity Data A-Sheets

Note: The Activity Data A-Sheets may not carry a title identical to the activity space detailed in this Note. Use of the appropriate A-Sheet code number will result in the correct activity space being accessed.

	Activity Space	A-Sheet Code no.	Para. no. in HBN 12 Supp. 2
1.	RECOVERY/REST: DENTAL	B2504	4.34
2.	CONSULT/TREATMENT ROOM: ORAL SURGERY	C0901	4.15
3.	CONSULT/TREATMENT ROOM: ORTHODONTICS 2 Dental treatment units	C0902	4.16
4.	CONSULT/TREATMENT ROOM: ORAL SURGERY ORTHODONTICS	C0903	4.17
5.	CONSULT/EXAMINATION ROOM	C0216	4.14
6.	STAFF REST ROOM/BEVERAGES	D0201	4.43
7.	RECEPTION	J0806	4.3
8.	WAITING	J1116	4.5
9.	CHILDREN'S PLAY SPACE	J1401	4.11
10.	SWITCHROOM	K0101	4.52
11.	LABORATORY: MAXILLO-FACIAL, PROSTHETIC AND ORTHODONTIC APPLIANCE	L1201	4.53
12.	LABORATORY: CERAMIC WORK (DENTAL)	L1203	4.53
13.	OFFICE: TYPE 3	M0219	4.39
14.	OFFICE: TYPE 4	M0220	
15.	OFFICE: TYPE 5	M0221	
16.	OFFICE MEDICAL: ORAL SURGERY/ORTHODONTICS Treatment planning	M0302	4.40
17.	CLEAN UTILITY	T0505	4.47
18.	WCs	V0907	4.38
19.	STORE: MODEL STORE	W0507	4.61
20.	STORE: DENTAL LABORATORY	W0602	4.54
21.	STORE: STATIONERY	W1507	4.58
22.	GENERAL STORE	W1530	4.59
23.	EQUIPMENT STORE	W1531	4.57
24.	UTILITY, DIRTY: WITH AUTOCLAVE	Y0425	4.42

Appendix 1

Glossary of terms

- **Acrylic dough** – acrylic dough is a mixture of a powdered polymer and liquid monomer. When packed into a flask and processed in boiling water, the acrylic dough will polymerise into finished acrylic plastic, that is, denture base material.
- **Anodic polisher** – a small metal tank containing a chemical solution. Finished metal castings are polished by electrolytic action produced by passing a current through the solution.
- **Articulator** – a metal device on which models of the jaws can be mounted and the action of the jaws opening and closing imitated.
- **Registration ("bite") blocks** – registration blocks are wax blocks on a base plate which can be trimmed and tried in the patient's mouth to give a technician the information required to construct wax trial dentures.
- **Burning out** – this is the process of burning out the wax in the middle of a mould for a dental casting. A void is left in the mould into which molten metal can be forced to produce the casting.
- **Casting machine** – the investment moulds used in the production of metal castings are heated to a high temperature and placed in a casting machine. The metal is melted by oxyacetylene gas or electronically and forced into the mould by centrifugal action.
- **Casting ring** – a metal ring surrounding a wax mould that has been covered with high temperature investment material.
- **Cephlostat** – a cephlostat is a large piece of static radiography equipment used to produce a profile view of the skull used in treatment planning and assessment of treatment progress.
- **Ceramic vacuum-firing furnace** – a ceramic furnace is used to fire prepared crowns or veneers at very high temperatures – when the porcelain fuses into a hard, translucent, tooth-like substance. By enclosing the crown, etc., in a vacuum during the firing process, minute air bubbles are extracted from the porcelain making it denser and giving it a more translucent and lifelike appearance.
- **Computerised digitiser and plotter** – the X-rays produced by a cephlostat are placed on a computerised plotting machine. The digitiser is placed over appropriate land marks on the skull X-ray. The digitised information is processed by the computer to provide reference information at the start and finish of orthodontic treatment or orthognathic surgery.
- **Computerised visual imaging system** – a system that uses facial photographs and skull X-rays to produce virtual displays of predicted outcomes of orthodontic treatment or othognathic surgery. It is used to plan treatment and to inform patients.
- **Flask** – a flask is a metal box, shaped roughly like a denture, that separates into two halves to provide a mould for making acrylic dentures.
- **Flasking** – flasking consists of making a plaster mould in a flask.
- **Investment** – a special hard refractory plaster type material that is used to encase a wax pattern in an investment ring so that a metal casting can be produced. The wax pattern is attached by wax ducts (called sprues) to a cone. The cone is used to form the top of the investment mould.
- **Malocclusion** – malformation of supporting tissues and irregularity of teeth. Normal variations occur naturally from person to person: sometimes the variations may be the result of more fundamental abnormalities or of disease. In either case, they may require correction to improve appearance and/or function. This is normally the work of the orthodontist.
- **Maxillo-facial surgery** – surgery of the fixed upper jaw and facial tissue. Maxillo-facial surgery is carried out in connection with the more severe cases of abnormality in respect of malformation of supporting tissues and irregularity of teeth and in the case of facial injury: fitting of special appliances may be necessary.
- **Occlusion** – the way that the upper and lower teeth meet together. Malocclusion is where this occurs in a way that is significantly different from the ideal.
- **Orthognathic surgery** – where there are gross malocclusions or abnormal skeletal patterns major surgery is carried out to correct these faults. This often involves repositioning the jaws and holding the bones in position with a cast metal splint fitted in the operating theatre.
- **Ortho-pantomograph** – an ortho-pantomograph is a large static item of radiology equipment normally located in the radiology department which takes a panoramic view of the jaws and teeth. It is used by both oral surgeons and orthodontists in diagnosis and treatment planning.

- **Packing (pressing)** – acrylic dough is packed into the empty space in the flask after the wax has been dissolved-out by boiling water. The two halves are fitted together again and the flask is pressed in a flask press to force the dough into all parts of the plaster mould. The flask is then clamped tight shut in a flask clamp.
- **Sprue** – a short piece of wax or plastic rod which acts as a channel for the molten metal to flow into the mould after the wax or plastic has been burnt off.
- **Trial** – many laboratory items such as dentures and splints are fitted into the patient's mouth at appropriate stages during their construction to ensure that they will fit when they are finally finished.
- **Wax trial** – dentures made from wax, with acrylic teeth, which are tried and adjusted as necessary in the patient's mouth.
- **Wet trimmer** – an electrically driven wet trimmer is used to trim plaster models by grinding away excess plaster and smoothing the sides.

Appendix 2

Sizing of oral surgery, orthodontic and restorative dentistry department

Introduction

1. The Appendix of Health Building Note (HBN) 12 – 'Out-patients department' 1989, includes information which will be helpful in determining the size of an oral surgery, orthodontic and restorative dentistry department.

2. In terms of the Appendix to HBN 12, consulting/treatment rooms in an oral surgery, orthodontic and restorative dentistry department are "rooms for special purposes". The number of consulting/treatment rooms in a department (based on the number of dental chairs) requires to be assessed separately from the number of consulting/examination (C/E) rooms in a general out-patients department.

3. Consideration should be given to using spare capacity in oral surgery, orthodontic and restorative dentistry departments for appropriate general out-patient purposes. It is recognised that this may not be appropriate with consulting/treatment rooms containing highly specialised equipment. Shared-use of C/E rooms may be possible, however, particularly in departments where more than one is provided.

4. A method which can be used to assess the number of dental chairs required for each of the various functions of a department, for example oral surgery, orthodontics, restorative dentistry and dental hygiene, as a basis for deciding the total number required, is described in paragraph 5. In addition to the number of attendances, consultation times, etc., which need to be included in the calculations, account must also be taken of other local factors, including:

- the number and the disciplines of staff who will work concurrently. This may be necessary:
  - (i) for reasons of clinical practice, for example, to facilitate immediate referral of patients or for joint clinics;
  - (ii) for logistical reasons related to the organisation of clinics and availability of staff, taking into account that staff will most likely have other commitments, such as operating theatre sessions, ward visits and/or sessions at other hospitals;
- how the two dental chairs in the orthodontic consulting/treatment room will be used, for example, with one practitioner working with one or both chairs or with two practitioners working with one chair each.

Calculation

5. Step-by-step calculations in respect of the sizing method referred to in paragraph 4 are set out below:

- annual consultation time required (in hours) (A) = (B x C) + (D x E) ÷ 60;
- number of consultation periods per week (F) = A ÷ (G x H);
- number of dental chairs required = F ÷ J

where

B = projected number of new attendances per annum;

C = average consultation* time (in minutes) for new attendances;

D = projected number of return attendances per annum;

E = average consultation* time (in minutes) for return attendances;

G = average duration of consultation* period (in hours);

H = number of working weeks in year;

J = number of clinic sessions per week.

---

* Note – for the purpose of this sizing method, the term consultation is used to include consultation, examination and treatment.

Appendix 3

Maxillo-facial, prosthetic and orthodontic appliance laboratory

Use of consulting/treatment room and laboratory for the production of full or partial dentures

Location	Process	Activity
Consulting/treatment room (or, for in-patients, ward)	Impression	Impression taken of patient's mouth
Plaster work area		Impression cast in plaster
Plaster work area		Casts trimmed using wet trimmer
Wire, wax and acrylic work area	Registering occlusion (bite)	Bite blocks made on casts
Consulting/treatment room (or ward)		Bite registered in mouth and shade of teeth chosen
Plaster work area		Casts mounted on articulator (hinge) and trimmed
Wire, wax and acrylic work area	Setting-up	Baseplate fitted to cast, wax melted and built up on cast, and acrylic teeth set up
Consulting/treatment room (or ward)	Trial	Wax trial tried in patient's mouth and checked for correct bite, shade and amount of visible teeth
Wire, wax and acrylic work area	Processing	Adjustments made to wax trial and wax refinished
Plaster work area		Wax trial encased in plaster mould
		Wax boiled out from mould
		Acrylic dough mixed and packed into flask. Flask closed under pressure and locked in clamp
Plaster work area		Acrylic cured using boiling water: when cool, flask opened
Wire, wax and acrylic work area		Rough surfaces of acrylic dentures ground, using bench hand grinder
Plaster work area		Dentures polished
Consulting/treatment room (or ward)	Fit	Dentures fitted in patient's mouth and occlusion, etc adjusted, using hand grinder (domiciliary unit)
	Ease	One week later, mouth and occlusion checked. Margins and fitting surface are adjusted

Other processes

Other processes include:

- repairs to cracked dentures;
- making duplicate dentures using old dentures for size and bite;
- lining dentures with acrylic to improve fit;
- making facial/oral prostheses to replace missing areas. (Many stages of the process are the same as for dentures.);
- making special dentures to cover and seal cleft palates.

Appendix 4

Maxillo-facial, prosthetic and orthodontic appliance laboratory

Production of orthodontic removable and functional appliances

Location	Process	Activity
Consulting/treatment room	Impression	Impression taken of patient's mouth. Wax occlusion record taken
Plaster work area		Impression cast in plaster (second copy made as record)
		Casts trimmed using wet trimmer and fitted together in correct bite position
Wire, wax and acrylic work area	Clasps	Clasps and springs bent from stainless steel wire to fit model
		Extra oral traction fitted
		Wax baseplate built up on cast
Plaster work area	Heat processing	Waxed model, with springs, flasked up (as for full denture – see Appendix 3)
		Model encased in plaster mould
		Wax boiled out from mould
		Acrylic dough mixed and packed into flask. Flask closed under pressure and locked in clamp
		Acrylic cured using boiling water: when cool, flask opened
Plaster work area	Cold processing	Acrylic mixed and built up on model processed in pressure flask
Wire, wax and acrylic work area	Finishing	Rough surfaces of appliance ground using bench hand grinder
Plaster work area		Appliance polished
Consulting/treatment	Fit	Appliance fitted in patient's mouth and occlusion, etc adjusted using hand grinder (domiciliary unit)
	Adjust	One week later, mouth and occlusion checked. Margins, fitting surface and springs are adjusted

Other processes

Other processes include:

- repairs to cracked appliances;
- fitting new springs;
- vacuum forming splints to hold teeth in place after trauma, etc;
- making special dentures to cover and seal cleft palates.

Appendix 5

Maxillo-facial, prosthetic and orthodontic appliance laboratory

Production of metal castings

Location	Process	Activity
Consulting/treatment room (or, for in-patients, ward)	Impression	Impression taken of patient's mouth. Wax occlusion record taken
Plaster work area		Impression cast in stone mix
		Cast trimmed using wet trimmer
	Articulation	Casts articulated on articulator
Metal casting work area	Wax-up	Wax applied to cast to make wax copy for casting using lost wax process. Plastic sprues added and mounted on investment cone
Plaster work area	Investment	Wax copy on cone invested in casting ring using refractory investment
Metal casting work area	Burning out	Casting ring heated in muffle furnace to burn out wax: ring then brought up to casting temperature
	Casting	Metal melted by gas/air or electroncally and forced into hot mould using centrifugal casting machine
Metal finishing work area	Rough finishing	When cool, casting removed, trimmed and sand-blasted
	Finishing	Sprues cut off and casting smoothed to finished shape using hand grinder
Metal finishing work area	Polishing	Casting polished using anodic polisher and/or polishing lathe
Wire, wax and acrylic work area	Attachments	Appliance tapped for screws, etc., and wires, etc., soldered on using micro-soldering torch
Consulting/treatment room (or ward)	Trial	Appliance tried in patient's mouth in some situations
(or operating theatre)	Fitting	Appliance cemented on teeth and screw plates fixed

Other related processes using metal casting procedures

The metal base of a metal denture is made in chromium cobalt using the above process and the teeth and plastic components set up, attached and processed as for full or partial dentures (see Figure 7). Gold inlays, crowns, and bridges are made using the same process as above with smaller casting rings and appropriate metal. Porcelain facings may be fused on in ceramic room.

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